**IN THE UNITED STATES DISTRICT COURT**
**FOR THE SOUTHERN DISTRICT OF NEW YORK**

| | |
|---|---|
| CARNEGIE INSTITUTION OF WASHINGTON and M7D CORPORATION,<br><br>Plaintiffs,<br><br>v.<br><br>FENIX DIAMONDS LLC,<br><br>Defendant. | Civil Action No. 1:20-cv-00200-JSR |

**DEFENDANT FENIX DIAMONDS LLC'S**
**MEMORANDUM IN SUPPORT OF ITS MOTION FOR SUMMARY JUDGMENT**

[redacted]

# TABLE OF CONTENTS

# TABLE OF AUTHORITIES

**Cases**



**Statutes**



**Rules**

## I. INTRODUCTION

Fenix Diamonds LLC ("Fenix") seeks summary judgment of non-infringement of all of the asserted claims of U.S. Patent Nos. 6,858,078 ("the '078 patent") and RE41,189 ("the '189 patent").

Fenix receives its diamonds from Nouveau Diamonds LLP ("Nouveau"). Statement of Uncontested Material Facts ("SOF") ¶ 39. There is no dispute that Nouveau's growing process produces more than an insubstantial amount of non-monocrystalline growth, specifically polycrystalline growth. As shown below, Nouveau grows diamonds on multiple seeds placed on a flat substrate, referred to as an "open" holder, such that non-monocrystalline growth [redacted] diamonds [redacted] as shown below. SOF ¶¶ 43, 50.

[redacted]

[redacted]

SOF ¶ 50, Joint Affidavit of [redacted]
("Nouveau Affidavit") (NV958–77 at NV971).

The asserted claims of the '078 patent require "growing single crystal diamond . . . on the growth surface." SOF ¶ 13. The Court construed *single-crystal diamond* to mean "a stand alone diamond having insubstantial non-monocrystalline growth" and *growth surface* to mean "the surface upon which diamond growth is occurring." *See* SOF ¶¶ 16, 22, ECF No. 42, *Markman* Order at 18–20. The Court rejected Plaintiffs' proposed construction that would "wrongly restrict" *growth surface* to include only the surface where single-crystal diamond is growing. *See* SOF ¶ 19, *Id*. at 19. Accordingly, Nouveau does not "[grow] single crystal diamond . . . on the growth surface" because Nouveau's growth process produces more than an insubstantial amount of non-monocrystalline growth. *See* SOF ¶ 52. And, as the '078 patent teaches, the non-monocrystalline growth (or polycrystallinity) produced in Nouveau's process demonstrates that it does not "[control] temperature of a growth surface of the diamond such that all temperature gradients across the growth surface are less than 20° C.," as required by all of the asserted claims of the '078 patent. In sum, there is no genuine issue of material fact as to the production of polycrystalline material during Nouveau's growth process such that the *growing single-crystal diamond* and *controlling temperature of a growth surface* limitations are not satisfied.

With respect to the '189 patent, it is undisputed that Nouveau anneals its diamond at a pressure less than "at least 4.0 GPA outside of the diamond stable phase." SOF ¶¶ 72–74. Plaintiffs have apparently conceded the issue, stating in their expert reports on infringement that the '189 patent is no longer at issue. SOF ¶¶ 12, 38. Accordingly, Fenix submits that it is entitled to summary judgment of noninfringement of both the '078 and the '189 patents.



[redacted]

## II. LEGAL PRINCIPLES

Under Rule 56(a) of the Federal Rules of Civil Procedure, a "court shall grant summary judgment if the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(a). "The movant bears the burden of demonstrating the absence of a genuine dispute of fact, and, to award summary judgment, the court must be able to find after drawing all reasonable inferences in favor of a non-movant that no reasonable trier of fact could find in favor of that party." *Palmer/Kane LLC v. Rosen Book Works LLC*, 204 F. Supp. 3d 565, 568 (S.D.N.Y. 2016).

A patent is infringed when a person "without authority makes, uses, offers to sell, or sells any patented invention, within the United States . . . during the term of the patent." 35 U.S.C. § 271(a). To determine whether there is infringement, the Court must "compare the properly construed claims to the allegedly infringing device." *SafeTCare Mfg., Inc. v. Tele-Made, Inc.*, 497 F.3d 1262, 1268 (Fed Cir. 2007). When alleging infringement of a method claim, a plaintiff must show that "all steps of the claimed method . . . [are] performed." *Mirror Worlds, LLC v. Apple Inc.*, 692 F.3d 1351, 1358 (Fed. Cir. 2012). Obtaining the same result as the claimed method does not mean that the accused infringer has practiced the claimed method. *See David Netzer Consulting Eng'r LLC v. Shell Oil Co.*, 824 F.3d 989, 998 (Fed. Cir. 2016). In the absence of a genuine factual dispute, the question of infringement collapses into a question of law and, thus, is appropriate for summary judgment. *See SafeTCare Mfg.,* 497 F.3d at 1269; *Taurus IP, LLC v. DaimlerChrysler Corp.*, 726 F.3d 1306, 1326 (Fed. Cir. 2013). An expert opinion based on an incorrect claim construction does not create a dispute of material fact. *MyMail, Ltd. v. America Online, Inc.*, 476 F.3d 1372, 1378 n.1 (Fed. Cir. 2007); *see George v. Honda Motor Co.*, 802 F.2d 432, 434 (Fed. Cir. 1986).



[redacted]

## III. STATEMENT OF FACTS

### A. The Asserted Claims

Plaintiffs allege, in their amended complaint, that Fenix infringes claims 1, 6, 7, 11, 12 and 16 of the '078 patent, and claims 1 and 2 of the '189 patent. SOF ¶ 10, ECF No. 93 at ¶ 10. Plaintiffs' subsequent infringement contentions assert that Fenix infringes these same claims, except for claim 7 of the '078 patent. SOF ¶ 11. There are two independent claims among the asserted claims of the '078 patent, i.e., claims 1 and 12. SOF ¶ 13. Claims 1 and 12 of the '078 patent recite:

| Claim 1 | Claim 12 |
|---|---|
| A method for diamond production, comprising:<br><br>controlling temperature of a growth surface of the diamond such that all temperature gradients across the growth surface are less than 20° C.;<br><br>and growing single-crystal diamond by microwave plasma chemical vapor deposition on the growth surface at a<br><br>growth temperature in a deposition chamber having an atmosphere with a pressure of at least 130 torr.<br><br>SOF ¶ 13, '078 patent at 14:64–15:4. | A method for diamond production, comprising:<br><br>controlling temperature of a growth surface of the diamond such that all temperature gradients across the growth surface are less than 20° C.;<br><br>and growing single-crystal diamond by microwave plasma chemical vapor deposition on the growth surface at a<br><br>temperature of 900-1400° C.<br><br>SOF ¶ 13, '078 patent at 15:31–37. |

The Court construed "single-crystal diamond" to mean "a stand alone diamond [made by chemical vapor deposition] having insubstantial non-monocrystalline growth." SOF ¶ 22, ECF No. 42 ("*Markman* Order") at 27–29. The Court construed "growth surface" to mean "the surface upon which diamond growth is occurring." SOF ¶ 16, *Id.* at 18–20. The Court rejected Plaintiffs' proposed construction of "growth surface" as improperly restricting this term to include only the surface where single-crystal diamond is growing. SOF ¶ 19, *Id.* at 19. Rather,



[redacted]

the Court construed "growth surface" to include polycrystalline diamond that grows on the diamond. SOF ¶¶ 17–18, *Id.* at 19–20.

The Court also construed the claim term "controlling the temperature of a growth surface of the diamond such that all temperature gradients across the growth surface are less than 20° C" in the '078 patent to mean "controlling temperature of a growth surface of the diamond such that all temperature gradients across the growth surface are maintained at less than 20° C." SOF ¶ 25, *Id.* at 18. The Court indicated that the term "all" in the phrase "all temperature gradients" means "the differences in temperature between any one spot on the growth surface and any other." SOF ¶ 26, *Id.* at 14. The Court further indicated that the word "maintained" in its construction means that all temperature gradients must be below 20° C "for substantially the entire growth process." SOF ¶ 27, *Id.* at 17.

Independent claim 1 of the '189 patent recites: "A method to improve the optical clarity of CVD diamond where the CVD diamond is single crystal CVD diamond, by raising the CVD diamond to a set temperature of at least 1500° C. and a pressure of at least 4.0 GPA outside of the diamond stable phase." SOF ¶ 14, '189 patent at 4:10–14. Claim 2 of the '189 patent is dependent on claim 1. SOF ¶ 14, *Id.* at 4:15–16.

**B. Nouveau's Process for Growing CVD Diamonds**

Fenix does not manufacture diamonds. SOF ¶ 39, Mehta Dep. Tr. at 33:22–34:3. Nouveau supplies Fenix with the CVD diamonds that Plaintiffs have alleged are infringing. SOF ¶ 40, *Id.* at 40:1–4.

Nouveau grows diamond on seeds placed on a flat substrate, referred to as an "open" holder. SOF ¶ 43. A single-crystal domain and a polycrystalline domain grow on each seed. SOF ¶ 48. The polycrystalline domains [redacted] as shown in Views 6 and 10 of the Nouveau Affidavit. SOF ¶ 50. More than an insubstantial amount of polycrystalline



[redacted]

material is grown around each single-crystal domain. SOF ¶ 52. Indeed, after growth is completed, the diamonds have "[redacted] polycrystalline growth [redacted]" SOF ¶ 51.

Nouveau anneals its diamonds [redacted]. SOF ¶ 72. In [redacted], the diamond [redacted] is annealed at a pressure less than 3[redacted] GPa. SOF ¶¶ 73–74.

SOF ¶ 50, VIEW 6 / NV967.



[redacted]

SOF ¶ 50, VIEW 10 / NV971.

## IV. ARGUMENT

### A. Undisputed Material Facts Establish That Nouveau's Process Does Not Infringe the '078 Patent

Plaintiffs have replaced the Court's claim constructions with their own previously rejected constructions in order to support their infringement theories. Under the Court's claim constructions, it is indisputable that Nouveau's diamond growth process does not infringe any of the asserted claims of the '078 patent.

There is no genuine issue of material fact as to the production of polycrystalline material during Nouveau's growth process. Summary judgment is appropriate here, where the question of infringement turns on the parties' competing views on the meaning of a previously construed claim term, rather than any underlying factual dispute regarding the method accused of infringement. *See, e.g.*, *George*, 802 F.2d at 434 ("The determination of scope of the claims is a



[redacted]

question of law, and a dispute respecting that legal issue does not preclude summary judgment.").

### 1. Nouveau's Diamond Growth Process Does Not "[Grow] [redacted] . . . on the Growth Surface"

The asserted claims of the '078 patent require "growing single crystal diamond . . . on the growth surface." SOF ¶ 13. The Court construed *single-crystal diamond* to mean "a stand alone diamond having insubstantial non-monocrystalline growth" and *growth surface* to mean "the surface upon which diamond growth is occurring." *See* SOF ¶¶ 16, 22, ECF No. 42, *Markman* Order at 18–20. The Court rejected Plaintiffs' proposed construction for "*wrongly* restrict[ing] the term to include only surface area where single-crystal diamond is growing." SOF ¶ 19, *Id*. at 19 (emphasis added).

The Court noted that even where the '078 patent's "method of growing single-crystal diamond is followed, small amounts of polycrystalline diamond will nonetheless grow in localized places on the diamond." SOF ¶ 20, *Id*. (citing '078 patent at 13:66–14:1). The '078 patent uses the term "growth surface" to refer to "the entire surface where hydrocarbon gases are accruing into new diamond." SOF ¶ 17, *Id*. The '078 patent acknowledges that the microwave plasma chemical vapor deposition method can also produce polycrystalline material. SOF ¶ 21, *Id*. at 19–20 (citing '078 patent at 13:25–26). Thus, the Court decided "[t]he construction of the term 'growth surface' must . . . not exclude polycrystalline growth." SOF ¶ 18, *Id*. at 20.

Nouveau grows diamond on seeds placed on a flat substrate, referred to as an "open" holder. SOF ¶ 43. A single-crystal domain and a polycrystalline domain grow on each seed. SOF ¶ 48. The polycrystalline domains [redacted] in Views 6 and 10 of the Nouveau Affidavit. SOF ¶ 50. More than an insubstantial amount of polycrystalline material is grown around each single-crystal domain. SOF ¶ 52.



[redacted]

Indeed, after growth is completed, the diamonds have "[redacted] polycrystalline growth [redacted] [redacted]" SOF ¶ 51.

When the claimed step of [redacted] is compared to the Nouveau diamond growing process, it is clear that the Nouveau process does not include this step because it does not [redacted] as those terms have been construed by the Court. More than an insubstantial amount of polycrystalline material is produced during the Nouveau diamond growing process. SOF ¶ 52. Accordingly, [redacted] insubstantial non-monocrystalline growth is not grown on the growth surface in the Nouveau process as required by the asserted claims of the '078 patent. *See* SOF ¶ 22, 52.

Plaintiffs do not contend that the amount of non-monocrystalline growth during Nouveau's process is insubstantial as required under the Court's constructions. Nor could they according to [redacted]

Rather, Plaintiffs' have advanced their patent infringement theories with claim constructions that the Court has already rejected. For example, Dr. Capano interprets "growth surface" to exclude polycrystalline diamond growth: "I do not interpret growth surface to include the non-diamond or polycrystalline diamond that grows at the periphery of the single crystal diamond." SOF ¶ 29. By resurrecting the claim construction that the Court has rejected, Plaintiffs attempt to ignore the polycrystalline material that their expert concedes is "inevitable." SOF ¶ 32, Capano Rpt. at ¶ 281 ("Under [the Court's] interpretation, it would be impossible to



[redacted]

grow single crystal material via MPCVD because polycrystalline growth on the edges (e.g., 010 faces) during MPCVD is inevitable.").

Nouveau grows [redacted] polycrystalline material on the surface where hydrocarbon gases are accruing into new diamond. *See* SOF ¶¶ 17, 52. This [redacted] polycrystalline material deposited on the growth surface during Nouveau's process is [redacted] *See, e.g.*, SOF ¶ 50. Because Nouveau grows [redacted] non-monocrystalline material on the growth surface, it does not grow [redacted] as construed by the Court. Accordingly, there is no factual dispute that under the Court's constructions of "growth surface" and [redacted] Nouveau does not practice the asserted claims of the '078 patent, and Fenix does not infringe any of the asserted claims of the '078 patent.

**2. The Growth Surface Temperature Gradients Exceed 20° C in Nouveau's Diamond Growth Process Such That It Does Not "[Control] Temperature of [the] Growth Surface"**

The asserted claims of the '078 patent require "controlling temperature of a growth surface of the diamond such that all temperature gradients across the growth surface are less than 20° C." SOF ¶ 13. The morphology of the diamond grown by the Nouveau process demonstrates that Nouveau does not practice this step, but rather has temperature gradients that exceed 20° C as evidenced by [redacted] polycrystalline material grown. *See* SOF ¶¶ 50, 53.

In the '078 patent, a "side contact" holder is used and is essential to preventing polycrystalline growth. SOF ¶ 56, '078 patent at 4:48–55 ("T]he . . . holder . . . makes a thermal contact with a side surface of the diamond 136 adjacent to an edge of a top surface of the diamond 136. . . . [and] . . . acts as a heat-sink to prevent the formation of twins or polycrystalline diamond along the edges of the growth surface of the diamond 136."). The '078 patent teaches that if the growth surface extends too far above the top of the side-contact-holder,



[redacted]

it will form large thermal gradients and polycrystalline material. SOF ¶ 57, *Id.* at 5:5–8 ("However, the distance [between the top of the side-contact-holder and the growth surface] *can not* be so large as to prevent the heat-sinking effect of the sheath … that prevents the formation of twins or polycrystalline diamond along the edges of the growth surface of the diamond.") (emphasis added). In order to avoid this problem, the '078 patent teaches that the grown diamond be repositioned in the side contact holder to prevent the formation of polycrystalline diamond. *See, e.g.*, SOF ¶ 58,'078 patent at 11:15–27; 12:30–38 at 12:36–38 ("By repositioning the diamond within the holder, the heat-sinking of the edges of the growth surface is improved."). At least one of the named inventors of the '078 patent agrees that a holder contacting the sides of the diamonds is necessary to maintain thermal gradients under 30°C. SOF ¶ 62, Vohra Dep. Tr. at 179:24–180:9.

Nouveau does not use a side contact holder, but rather grows its diamond on an open holder. SOF ¶ 43. Accordingly, the Nouveau diamond growing process does not (and cannot) maintain all temperature gradients across the growth surface at less than 20° C.

In the '078 patent, growth morphology serves as a proxy for temperature uniformity in that polycrystalline growth is evidence of a temperature gradient on the growth surface that is above 20° C. *See, e.g.*, SOF ¶ 59, '078 patent at 4:52–55, 5:5–8, and 6:51–54 ("Precise control over . . . growth surface temperature gradients prevents the formation of polycrystalline diamond or twins such that a large single crystal diamond can be grown."). Plaintiffs' experts agree. Dr. Capano states that the '078 patent teaches "strictly controlling the temperature gradients across the growth surface" to "avoid defects like polycrystallinity and twinning." SOF ¶ 55, Capano Rpt. at ¶ 69. Dr. Gleason confirms that non-monocrystalline growth at the periphery of a



[redacted]

single-crystal domain "suggests that there is a relatively large temperature gradient across the surface." SOF ¶ 53, Gleason Rpt. at ¶ 113.

[redacted] polycrystalline domains produced in Nouveau's growth process demonstrates that it does not "[control] temperature of a growth surface of the diamond such that all temperature gradients across the growth surface are less than 20° C.," as required by all of the asserted claims of the '078 patent. Analysis of thermal camera measurements taken during Nouveau's diamond growing process confirm that the Nouveau growth surface has temperature gradients greater than 50° C. SOF ¶¶ 65–69.

Diamonds grown by Nouveau exhibit [redacted] non-monocrystalline growth as a result of the growing process. As a result, they do not infringe the asserted claims of the '078 patent.

**B. Undisputed Material Facts Establish That Nouveau's Process Does Not Infringe the '189 Patent**

Plaintiffs have asserted claims 1 and 2 of the '189 patent against Fenix in this litigation. SOF ¶ 10. Both of the asserted claims require raising a CVD diamond to "a pressure of at least 4.0 GPA." SOF ¶ 14.

With respect to the '189 patent, it is undisputed that Nouveau anneals its diamond at a pressure less 3[redacted] GPA. SOF ¶¶ 72–74. Plaintiffs have apparently conceded the issue. Plaintiffs have conceded in their expert reports on damages and infringement that Nouveau does not infringe any claim of the '189 patent. *See* SOF ¶¶ 12, 38, Jarosz Rpt. at 2 n.2 (stating that the '189 patent is "no longer at issue"); Capano Rpt.at 1 ¶ 1.) Therefore, the Court should grant summary judgment of non-infringement of the '189 patent.



[redacted]

## V. CONCLUSION

For the foregoing reasons, Fenix respectfully requests the Court to grant its motion for summary judgment of non-infringement of the '078 and the '189 patents.

Dated: October 13, 2020

*/s/ Steven H. Sklar*
Daniel P. Waxman (DW-0599)
BRYAN CAVE LEIGHTON PAISNER LLP
1290 Avenue of the Americas
New York, NY 10104
Telephone: (212) 541-2040
Facsimile: (212) 541-4630
dpwaxman@bryancave.com

Steven H. Sklar (*pro hac vice*)
Maxwell B. Snow (*pro hac vice*)
David M. Airan (*pro hac vice*)
Nicole E. Kopinski (*pro hac vice*)
LEYDIG, VOIT & MAYER, LTD.
Two Prudential Plaza, Suite 4900
180 North Stetson Avenue
Chicago, IL 60601
Telephone: (312) 616-5600
Facsimile: (312) 616-5700
dairan@leydig.com
ssklar@leydig.com
msnow@leydig.com
nkopinski@leydig.com

*Attorneys for Defendant,*
*Fenix Diamonds LLC*



[redacted]